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Phenomena of Jupiter's Satellites, and Occultations of Stars by the Moon, observed at Stonyhurst, 1884.

By the Rev. S. J. Perry.

	Sat.	Phenomena.	G.M.T.	Corr. of N.A.	Observer.	Remarks.
			h m s	m s		
1884, Jan. 20	2	Oc. R. First seen	8 35 19·9		S. J. P.	Fair.
		Bisection	36 25·7			
		External contact	39 15·0			
31	1	Tr. E. Internal contact	10 50 11·0		W. C.	Planet very tremulous.
		Bisection	52 21·0			
		External contact	54 51·3			
Feb. 2	3	Oc. D. External contact	10 55 21·4		J. R.	Good.
		Bisection	59 47·9			
		Last seen	11 3 23·4			
22	1	Oc. D. External contact	10 54 8·7		W. C.	Fair.
		Bisection	55 23·2			
		Last seen	56 41·2			
24	1	Ec. R. First seen	8 28 57·1	−0 12·9	W. C.	Good.
		Half light	30 9·6			
		Full light	31 32·6			
Mar. 15	2	Tr. E. Internal contact	7 58 37·3		S. J. P.	Thin clouds passing.
		Bisection	8 1 33·5			
		External contact	3 17·0			
16	1	Oc. D. External contact	10 46 11·6		W. C.	Planet very unsteady.
		Bisection	48 6·6			

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	Sat.	Phenomena.	M.T. h m s	Corr. of N.A. m s	Observer.	Remarks.
1884, Mar. 16		Last seen	49 58·5			
	3	Oc. R. First seen	11 15 25·0		W. C.	Somewhat unsteady.
		Bisection	17 15·5			
		External contact	19 23·5			
	3	Ec. D. Fading	12 20 12·5		W. C.	Good.
		Half light	23 19·0			
		Last seen	26 26·5	+2 19·5		
	1	Ec. R. First seen	14 15 10·2	+0 29·2	W. C.	Hazy.
		Half light	16 26·0			
		Full light	17 35·5			
21	4	Ec. R. First seen	8 18 12·5	−4 6·5	W. C.	Very good.
		Half light	21 45·0			
		Full light	25 41·0			
23	1	Oc. D. External contact	12 38 50·3		W. C.	Very good. Satellite smaller than usual.
		Bisection	39 45·4			
		Last seen	41 38·3			
Ap. 7	2	Oc. D. External contact	7 41 51·1		W. C.	Fair.
		Bisection	43 25·6			
		Last seen	45 4·4			
9	1	Tr. I. External contact	8 14 17·3		S. J. P.	Very unsteady.
		Bisection	16 43·1			
		Internal contact.	18 38·4			

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	Sat.	Phenomena.	G.M.T.	Corr. of N.A.	Observer.	Remarks.
			h m s	m s		
1884, Ap 9	1	Tr. E. Internal contact	10 31 23·1		W. C.	Very unsteady.
		Bisection	33 53·6			
		External contact	35 40·1			
10	3	Tr. I. External contact	9 10 6·9		W. C.	Hazy.
		Bisection	14 27·7			
		Internal contact	18 38·2			
17	1	Ec. R. First seen	10 54 42·8	+0 37·8	J. R.	Very good.
		Half light	56 44·8			
		Full light	58 21·8			
May 18	1	Tr. E. Internal contact	9 11 53·2		W. C.	Unsteady.
		Bisection	13 54·7			
		External contact	16 17·2			
26	1	Ec. R. First seen	9 29 48·4	+0 46·4	W. C.	Rather hazy.
		Half light	30 43·9			
		Full light	31 26·4			
Nov. 9	1	Tr. E. Internal contact	16 34 19·7		W. C.	Fair.
		Bisection	35 52·7			
		External contact	37 34·2			
10	4	Ec. D. Half light	16 12 17·2		W. C.	Thin clouds passing.
		Last seen	14 20·6	+1 2·6		

The 8-inch Equatorial was used throughout, the observers being the Rev. S. J. Perry, and Messrs. W. Carlisle and J. Rooney.

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Occultations of Stars by the Moon.

	Star.	Phen.	G.M.T.			Limb.	Obs.	Remarks.
			h	m	s			
1883.								
Mar. 12	*o* Arietis	D.	6	45	19·7	Dark	W.C.	Observation very good.
		R.	7	46	4·6	Bright	,,	,,
1884.								
Mar. 11	ν Leonis	D.	9	23	53·4	Bright	,,	Hazy.
		R.	10	21	1·7	,,	,,	Very good.
Oct. 9	130 Tauri	R.	10	39	12·0	Dark	,,	,,
12	60 Cancri	D.	16	54	52·0	Bright	,,	,,
		R.	17	35	1·3	Dark	,,	,,
	α Cancri	D.	18	0	53·1	Bright	,,	Good.
		R.	18	57	3·9	Dark	,,	Difficult. Twilight.
Nov. 9	*h* Leonis	D.	13	59	55·8	Bright	,,	Very good.
		R.	15	4	9·1	Dark	,,	,,

Data for a Graphical Representation of the Solar System.

By A. Marth.

The recognition of the chief peculiarities of the orbits of comets and planets, of some of their mutual relations, and especially of their proximities, may be considerably aided by a proper graphical representation. The method of representation, which I have employed in special cases for a long time past, appears to me so serviceable and instructive, that I have thought it worth the trouble to apply it to a great number of orbits, and as some recent publications* seem to show that the method is not known, it will probably be of real service to others if I publish the data, which will enable them to prepare such an instructive representation on an adequate scale for themselves.

The principle of the method employed is very simple. The Sun's centre being the common focus of all the orbits, a plane passing through the Sun's centre perpendicular to the ecliptic will intersect all the orbits. Let this plane rotate, and let, for each orbit, the tracing be represented which the point of intersection produces on the plane in the course of a full rotation, and which, for the present purpose, may perhaps be called the "ecliptical intersect" of the orbit. The form or shape of the tracing or intersect depends on the elements, i, e, ω, of the orbit: i, the inclination to the ecliptic; e, the eccentricity; and ω, the angular distance or departure of the perihelion from the

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* *Vide* the dissertation of Andreas Galle, *Zur Berechnung der Proximitäten der Asteroiden-Bahnen,* Breslau, 1883, and the review of it, by Fr. Deichmüller in the *Vierteljahrsschrift der Astron. Gesellschaft,* vol. xix, pp. 214–225.